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IS 7004 (1973): Yeast Extract, Microbiological Grade [FAD 15: Food Hygiene, Safety Management and Other Systems]



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IS : 7004 - 1973

Indian Standard

SPECIFICATION FOR

YEAST EXTRACT, MICROBIOLOGICAL GRADE

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SPECIFICATION FOR YEAST EXTRACT, MICROBIOLOGICAL GRADE

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Indian Standard

SPECIFICATION FOR YEAST EXTRACT, MICROBIOLOGICAL GRADE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 28 August 1973, after the draft finalized by the Food Hygiene, Sampling and Analysis Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Unless the ingredients used in media for microbiological work are of uniform quality, the results obtained might be erroneous and might be unreliable. Since the media used in different laboratories often differ greatly in their quality, the results of microbiological work at different laboratories cannot be compared. Therefore, with a view to unifying the practices of different laboratories dealing with microbiology and providing guidance to the indigenous manufacturers regarding the quality, it was decided to bring out a series of Indian Standard specifications for ingredients commonly used in media for microbiological work.

0.2.1 For specific purposes, any additional requirements shall be as agreed to between the purchaser and the supplier.

0.3 Yeast extract is commonly used in microbiological work. It is obtained by concentrating the water soluble portion of autolyzed yeast. The autolysis should be carefully controlled to retain the naturally occurring B-complex vitamins and sufficiently high amino-acid content.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes requirements and methods of test for yeast extract, microbiological grade.

*Rules for rounding off numerical values (*revised*).

2. REQUIREMENTS

2.1 A 0.5 percent aqueous solution shall show a clear straw coloured liquid having pH between 5.4 and 6.6 and shall not coagulate on boiling.

2.2 The pyridoxine content of yeast extract shall be not less than 60 µg per gram on dry basis when tested in accordance with the method prescribed in Appendix A.

2.3 The material shall also conform to the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR YEAST EXTRACT

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST (REF TO CL No. OF IS : 6854-1973*)
(1)	(2)	(3)	(4)
i)	Total solids, percent by mass, <i>Min</i>	65	5
ii)	Ash, percent by mass, <i>Max</i>	10	6
iii)	Total nitrogen, percent by mass, <i>Min</i>	7	9
iv)	Sodium chloride, percent by mass, <i>Max</i>	15	11

*Method of sampling and test for ingredients used in media for microbiological work.

3. PACKING, STORAGE AND MARKING

3.1 Packing — The material shall be securely packed in well-filled wide mouth containers so as to preclude contamination of the contents.

3.2 Storage — The material shall be stored in a cool and dry place.

3.3 Marking — Each container shall be marked legibly to give the following information:

- Name of the material including the words 'Microbiological Grade',
- Name and address of the manufacturer,
- Minimum net content,
- Batch or code number, and
- The quantity of sodium chloride.

3.3.1 The container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

4. SAMPLING

4.1 The representative samples of the material shall be drawn according to the method prescribed in 3 of IS : 6854-1972*.

5. TESTS

5.1 Tests shall be carried out by the methods prescribed in 2.1, 2.2 and col 4 of Table 1.

5.2 **Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water (see IS : 1070-1960†) shall be employed in tests.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the experimental results.

APPENDIX A

(Clause 2.2)

MICROBIOLOGICAL ASSAY OF YEAST EXTRACT TO DETERMINE PYRODOXINE CONTENT BY PLATE METHOD

A-1. ASSAY ORGANISM

A-1.1 *Saccharomyces Carlsbergensis* 4228

A-2. STOCK CULTURE AND PREPARATION OF INOCULUM

A-2.1 Grow *S. carlsbergensis* 4228 in 4 percent malt-agar solution, pH 5 to 5.5, in 30 ml screw-capped bottles incubating for 18 to 24 hours at 28°C.

*Method of sampling and test for ingredients used in media for microbiological work.

†Specification for water, distilled quality (revised).

Wash off yeast cells and suspend in sterile normal saline; 1 ml of this will be the inoculum for the test.

A-3. BASAL MEDIUM FOR THE TEST

A-3.1 The following shall be the basal medium for the test:

Glucose	50 g
Potassium dihydrogen phosphate	0.55 g
Potassium citrate	5 g
Citric acid	1.0 g
Casein hydrolyzate (vitamin-free)	4 g
Nicotinic acid	1 000 µg
Thiamine hydrochloride	250 µg
Calcium pantothenate	1 000 µg
Biotin	8 µg
Inositol	0.025 µg
Salt solution (<i>see</i> Note)	25 ml
DL-Tryptophan	0.1 g
Dissolved in	900 ml
pH adjusted to	4.6
Agar	18 g

NOTE — Salt solution shall consist of the following, volume made up to 100 ml with distilled water:

Potassium chloride	1.7 g
Calcium chloride ($\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$)	0.5 g
Magnesium sulphate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$)	0.5 g
Ferric chloride ($\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$)	0.01 g
Manganese sulphate ($\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$)	0.01 g

A-3.2 Sterilize by heating at 110°C for 20 minutes.

A-4. STANDARD PYRIDOXINE SOLUTION

A-4.1 Prepare standard pyridoxine solutions containing 0.125, 0.25, 0.05, 1.0 and 2 µg per ml. Sterilize by heating at 110°C for 20 minutes.

A-5. TEST SOLUTION

A-5.1 Dissolve 2 g (on dry mass basis) yeast extract in 25 ml distilled water. Dilute to 1:2, 1:4, 1:8 and 1:16 with distilled water. Use neat solution. Sterilize by heating at 110°C for 20 minutes.

A-6. PREPARATION OF THE PETRI DISHES

A-6.1 Use 10 tubes each containing 20 ml of the basal medium, five of which will be required for the standard pyridoxine solutions and five tubes for the test solutions. Melt the contents of the tubes of basal medium in a boiling water-bath, and then cool to temperature of 48 to 50°C and maintain at this temperature. Add 1 ml of the inoculum (*see A-2.1*) to each tube and mix by rotation to distribute the yeast cells evenly throughout the medium. Pour into sterile petri dishes, 9 cm diameter, and allow to solidify. Cut 5 holes, 10 mm diameter, in medium in each petri dish using a sterile cutter. Use each petri dish for individual dilution of standard pyridoxine solutions and of the test yeast extract solutions. These are to be placed in the holes in volume of 0.1 ml after which the holes are sealed with a drop of melted medium. Incubate for 18 hours at 28°C.

A-7. CALCULATION FOR PYRIDOXINE CONTENT

A-7.1 Determine the mean values of the diameters of the zones of growth. Plot these values against the logarithms of the concentration of the pyridoxine standard from which the pyridoxine content of the sample can be obtained.

INDIAN STANDARDS

ON

FOOD HYGIENE, SAMPLING AND ANALYSIS

IS:

- 2491-1972 Code for hygienic conditions for food processing units (*first revision*)
- 5059-1969 Code for hygienic conditions for large scale biscuit manufacturing units and bakery units
- 5126 (Part I)-1969 Glossary of general terms for sensory evaluation of foods: Part I Methodology
- 5126 (Part II)-1969 Glossary of general terms for sensory evaluation of foods: Part II Quality characteristics
- 5398-1969 Methods of estimation of thiamine (vitamin B₁) in foodstuffs
- 5399-1969 Methods of estimation of riboflavin (vitamin B₂) in foodstuffs
- 5400-1969 Methods for estimation of nicotinic acid (niacin) in foodstuffs
- 5401-1969 Methods for detection and estimation of coliform bacteria in foodstuffs
- 5402-1969 Method for plate count of bacteria in foodstuffs
- 5403-1969 Method for yeast and mould count of foodstuffs
- 5404-1969 Code of practice for handling of food samples for microbiological analysis
- 5835-1970 Methods for estimation of vitamin D in foodstuffs
- 5837-1970 Code for hygienic conditions for soft drinks manufacturing units
- 5838-1970 Methods for estimation of vitamin C in foodstuffs
- 5839-1970 Code for hygienic conditions for manufacture, storage and sale of ice-creams
- 5886-1970 Methods for estimation of carotenes and vitamin A (retinol) in foodstuffs
- 5887-1970 Methods for detection of bacteria responsible for food poisoning and food-borne diseases
- 6540-1972 Code for hygienic conditions for manufacture and handling of ice for human consumption
- 6541-1972 Code for hygienic conditions for establishment and maintenance of mid-day-school meal programme
- 6542-1972 Code for hygienic conditions for fruit and vegetable canning units
- 6850-1973 Agar, microbiological grade
- 6851-1973 Meat extract, microbiological grade
- 6852-1973 Bile salts, microbiological grade
- 6853-1973 Peptone, microbiological grade
- 6854-1973 Methods of sampling and test for ingredients used in media for microbiological work